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L2: Entry 2 of 2

File: USPT

apply ref. necessarly by Jan 6, 1987 omcolf.

DOCUMENT-IDENTIFIER: US 4634533 A

TITLE: Method of converting brines to useful products

also get 4.822500

BSPR:

This invention relates to a process for converting brines into useful products, and more particularly to converting <u>saline</u> waters such as oil and gas field brine wastes, seawater or effluent from a seawater desalination plant, or other inland <u>saline</u> waters into animal feed supplements, fertilizer, salt, purified brine and <u>purfied</u> water.

BSPR:

While evaporation as a means of recovering fresh water from these <u>saline</u> sources has been attempted, the presence in such brines of a large proportion of divalent metal chlorides such as calcium and magnesium chloride have greatly complicated recovery efforts. These metal chlorides are highly corrosive to process equipment surfaces and deposit hard to remove mineral scales. This scale deposition becomes an even greater problem when the brines are heated.

BSPR:

Some attempts have been made in the past to separate useful byproducts from brines or other industrial waste waters. For example, Miller, U.S. Pat. No. 3,374,081, teaches a method of precipitating minerals from saline waters using lignin compounds, proteinaceous compounds, and tannins. The saline waters are initially concentrated by evaporation and the resultant salt precipitate removed. Then an organic precipitating agent such as a lignin or tannin is added to form an organic fertilizer containing other inorganic minerals.

BSPR:

Baldassari, U.S. Pat. No. 4,069,033, teaches the extraction of fertilizer salts and organic substances from a variety of industrial waste waters including sugar mill, distillery, and <u>fermentation</u> wastes. Baldassari teaches the use of strong acids or bases to form precipitates from such waste waters which precipitates are taught to be useful as fertilizers. However, neither of these particular procedures is believed to have gained widespread use.

BSPR:

Accordingly, the need exists for a cost effective and environmentally acceptable method for the disposal of oil and gas field waste brines and other saline water sources.

BSPR:

The present invention provides for the recovery of valuable products such as animal feed supplements, fertilizers, magnesia, iron oxide, salt, purified brine, and purified water from saline water sources such as oil and gas field waste brines and seawater. These products are useful materials having economic value.

DEPR:

In accordance with the practice of the present invention, and with reference to the drawing FIGURE, a saline water source such as an oil field waste brine, seawater, or other inland <u>saline</u> water is initially stored in a large pit, tank, or storage chamber 10. The pit, tank, or storage chamber 10 is preferably lined or otherwise formed to be substantially water tight. If an oil or gas field waste brine is used as the <u>saline</u> water source, it may be necessary to remove traces of oil which are <u>present</u> in the brine. Typically, there is approximately one-half pint of oil per barrel of brine as received from oil field operations. This oil removal is accomplished through the use of a surface skimmer 12 which collects oil floating on the surface of the brine and pumps it via line 14 and pump 16 to an oil storage tank 18.

DEPR:

To the reaction mixture, an alkaline agent is added to adjust the pH of the mixture to the range of 1.8 to 2.9. A metering pump and pH meter may be used to control the addition of alkaline agent. As the alkaline agent, either soda ash (Na.sub.2 CO.sub.3), caustic soda (NaOH), potassium hydroxide, or potassium carbonate are preferred. The addition of an alkaline agent causes the precipitation of a mixture of fertilizer salts including principally dicalcium phosphate (CaHPO.sub.4.2H.sub.2 O). Additionally, most trace impurities in the brine such as strontium, iron, aluminum, flourine, and the like, will also be precipitated at this stage as complex mineral salts. This is because other ions will react with the phosphoric acid at pH's lower than that which calcium will react. This first stage of precipitation may not be necessary where impurity levels in the brine are sufficiently low.

DEPR:

The remaining brine is now substantially free of all divalent metal cations. The brine is pumped from storage tank 74 by pump 76 to an optional evaporation system 78. It may be desirable to adjust the pH of the brine in storage tank 75 to minimize corrosion problems in the evaporation equipment, and this may be accomplished by further addition of an alkaline agent such as sodium hydroxide to the brine. The brine itself is a useful product which can be used as a raw material for chlor-alkali plants. Optionally, it may be evaporated to recover crystallized salt.

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Search Results - Record(s) 1 through 2 of 2 returned.

☐ 1. Document ID: US 5476142 A

L2: Entry 1 of 2

File: USPT

Dec 19, 1995

US-PAT-NO: 5476142

DOCUMENT-IDENTIFIER: US 5476142 A

TITLE: Flexible contaminant-resistant grout composition and method

DATE-ISSUED: December 19, 1995

INVENTOR-INFORMATION:

NAME C

CITY

STATE

ZIP CODE

COUNTRY

Kajita; Laura

Palatine

IL

US-CL-CURRENT: 166/294; 106/803, 166/292, 405/264, 405/267

Full Title Citation Front Review Classification Date Reference Claims KMC Draw. Desc Image

☐ 2. Document ID: US 4634533 A

L2: Entry 2 of 2

File: USPT

Jan 6, 1987

US-PAT-NO: 4634533

DOCUMENT-IDENTIFIER: US 4634533 A

TITLE: Method of converting brines to useful products

DATE-ISSUED: January 6, 1987

INVENTOR-INFORMATION:

NAME

CITY

STATE

ZIP CODE

COUNTRY

Somerville; Robert L.

Columbus

ОН

43232

Sweat; Samuel F.

Sullivan; John L.

Columbus

OH

43232

US-CL-CURRENT: 210/722; 210/724, 210/726, 210/737, 210/912, 210/915, 423/169,

<u>423/311</u>, <u>588/236</u>, <u>588/242</u>, <u>588/246</u>, <u>588/248</u>, <u>71/43</u>

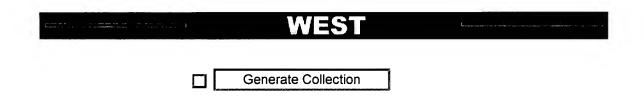
Full Title Citation Front Review Classification Date Reference Claims KMC Draw Desc Image

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| Term | Documents |
|--------------------------------------------------------------|-----------|
| FERMENTATION.USPT. | 23827 |
| FERMENTATIONS.USPT. | 2652 |
| SALINE.USPT. | 74469 |
| SALINES.USPT. | 162 |
| "SODA ASH".USPT. | 0 |
| CORROSION.USPT. | 122314 |
| CORROSIONS.USPT. | 304 |
| ("SODA ASH" AND FERMENTATION AND SALINE AND CORROSION).USPT. | 2 |

| Display | 10 | Documents, starting with Document: | 2 |
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Display Format: CIT Change Format



L2: Entry 1 of 2 File: USPT Dec 19, 1995

DOCUMENT-IDENTIFIER: US 5476142 A

TITLE: Flexible contaminant-resistant grout composition and method

BSPR:

Water-swellable or sodium bentonite clay, when used together with Portland cement, aids in reducing shrinkage of the cement or grout composition but, still, substantial shrinkage occurs, sometimes resulting in undesirable inter-aquifer transfer. Other problems encountered with the above-described prior art cement compositions include a high alkalinity which can alter geotech analyses that rely on accurate pH determination for detection of metal ion contamination; permeability of the cement or grout composition after setting because of the properties of the composition or because of cracking of the cement due to ground shifting; the expense of Portland cement; heating of the cement or grout during curing causing weakening of the well casing, particularly where polymeric casings are used; corrosion of the iron-containing well casings because of toxicity of the cement or grout composition, or due to inadequate filling, e.g., shrinkage or cracking of the composition within the annulus, resulting in contamination of the recovered fluid or inadequate well plugging; abrasiveness of the cement or grout on the mixing equipment; initial relatively high viscosity of the composition when mixed with water resulting in more difficulty in completely filling an annulus, with bridging sometimes occurring in the annulus causing inter-zone transfer of fluid and/or contamination; and a non-flexible set cement resulting in cracking upon ground shifting or shrinkage and fluid contamination. The compositions of the present invention solve or improve each of the deficiencies in the above-described prior art compositions.

DEPR:

In accordance with the preferred embodiment of the present invention, a dispersing agent is included with the water-soluble polymer to achieve more even and homogeneous impregnation of the polymer, upon solubilization, into the entire mass of the smectite clay(s) being treated. While the dispersing/thinning agent is not essential to achieve the advantages of the present invention, the thinning of a slurry enables the clay platelets to form a more compact sealant layer. The SAPP does not really help the polymer to impregnate the clay as much as the rewetting and extruding does. Rewetting and extruding the clay with polymer and the dispersing/thinning agent, e.g., SAPP, helps the end product since SAPP impregnated into the clay aids in thinning and better dispersing the clay after being impregnated into the clay with the polymer. The preferred dispersing/thinning agent is sodium acid pyrophosphate (SAPP). Other suitable dispersing agents include tetra sodium pyrophosphate; sodium meta phosphate; sodium tetra phosphate; tannic acid; sodium tannate; soda ash; caustic soda; calcium lignosulfonate; mined lignins and modified chrome lignosulfonates. The dispersing agent is included in the grout composition in an amount of 0% to about 15%, based on the dry weight of the water-insoluble solids in the composition, preferably about 1% to about 10% by weight of water-insoluble solids.

DEPR:

The exceptions to this characteristic were CMC samples, as shown in Tables VII and VIII. Both the "dry" and rehydrated CMC samples showed little to no difference in fluid loss values when dispersed in 1000 ppm CaCl.sub.2, versus DI water. Although these CMC samples may seem promising with respect to

calcium contamination resistance (as did the "ALCOMER 228" polymer), it may not be advisable to use CMC, guar gums, or any other natural organic derivative that will degrade with time, in a product that must remain stable in place for long periods of time, because aging causes CMC and guars to ferment. However, <u>fermentation</u> of additives can be prevented by adding a biocide, e.g., together with the polymer, to inhibit bacterial growth.

DEPR:

Special attention should then be exercised to see if the samples could either recover from such ruptures and re-establish its sealant qualities as well as and maintain its contaminant resistance. Although the sea water permeants penetrated Grout D and the 20% polymer-impregnated sodium bentonite fines grout composition, within the first two days of testing, there was not a significant increase in the filtrate values or flow rates. In fact, on the third day of the test, Grout D experienced a noticeable increase in filtrate values for about 1 hour, and then subsequently the values decreased and stabilized. It appears that the grout sample had an irregularity or rupture in the cake layer, but was able to "heal" itself and recover. Although testing is not completed, the results so far indicate that the three grout samples were able to resist degradation from the saline permeants and able to either maintain adequate sealant characteristics with the presence of numerous voids and/or recover from occurring disturbances in the sample layer cake.

DEPR:

Preliminary results with sea water as the permeant indicate that both grouts produce permeabilities similar to the grout columns with tap water as their permeants. This indicates that these grout formulas are currently able to withstand degradation from the sea water. This is a vast improvement over some prior art bentonite grout products which have failed in the rigid wall columns in a shorter time span and with less severe permeants. The data collected suggest that the polymer-impregnated sodium bentonite fines-containing grout formulations appear to be highly contaminant resistant to severely saline permeants.

CLPR:

20. In the improved method of claim 19, wherein the dispersing agent is selected from the group consisting of sodium acid pyrophosphate; tetra sodium acid pyrophosphate; sodium meta phosphate; sodium tetra phosphate; tannic acid; sodium tannate; soda ash; caustic soda; calcium lignosulfonate; lignin; chrome lignosulfonate; and mixtures thereof.

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Search Results - Record(s) 1 through 5 of 5 returned.

☐ 1. Document ID: US 5998182 A

L4: Entry 1 of 5 File: USPT Dec 7, 1999

US-PAT-NO: 5998182

DOCUMENT-IDENTIFIER: US 5998182 A

TITLE: Deterioration inhibitor for emulsion-type processing oil and method for

inhibiting deterioration of emulsion-type processing oil using the same

DATE-ISSUED: December 7, 1999

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY Nagahara; Hironari Higashi-Hiroshima JPX Yamasaki; Hisao Hiroshima JPX Miyama; Takashi Kashiwa JPX Ito; Nobuhiro Yamanashi-ken JPX

US-CL-CURRENT: 435/170; 424/114, 424/115, 424/93.4, 435/244, 435/252.1

Full Title Citation Front Review Classification Date Reference Claims KWC Draw. Desc Image

☐ 2. Document ID: US 5683916 A

L4: Entry 2 of 5 File: USPT Nov 4, 1997

US-PAT-NO: 5683916

DOCUMENT-IDENTIFIER: US 5683916 A

TITLE: Membrane affinity apparatus and purification methods related thereto

DATE-ISSUED: November 4, 1997

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

Goffe; Randal A. Medway MA
Zale; Stephen E. Marlborough MA
O'Connor; James L. Chelmsford MA
Kessler; Stephen B. Princeton MA

 $\begin{array}{c} \text{US-CL-CURRENT: } \underline{436/535; } \underline{210/198.3, } \underline{210/500.21, } \underline{210/500.23, } \underline{210/500.41, } \underline{210/638, } \\ \underline{210/656, } \underline{435/180, } \underline{435/181, } \underline{435/182, } \underline{435/287.1, } \underline{435/287.2, } \underline{435/287.2, } \underline{435/288.1, } \underline{435/6, } \\ \underline{436/161, } \underline{436/178, } \underline{436/518, } \underline{436/531, } \underline{436/532, } \underline{530/413, } \underline{530/417} \\ \end{array}$

Full Title Citation Front Review Classification Date Reference Claims KWC Draw. Desc Image

☐ 3. Document ID: US 5652135 A

L4: Entry 3 of 5

File: USPT

Jul 29, 1997

US-PAT-NO: 5652135

DOCUMENT-IDENTIFIER: US 5652135 A

TITLE: Strains of bacillus and aerococcus as deterioration inhibitor for

emulsion-type processing oil

DATE-ISSUED: July 29, 1997

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

Nagahara; Hironari Higashi-Hiroshima JPX
Yamasaki; Hisao Hiroshima JPX
Miyama; Takashi Kashiwa JPX
Ito; Nobuhiro Kita-koma-gun JPX

US-CL-CURRENT: 435/252.1; 435/244, 435/252.5

Full Title Citation Front Review Classification Date Reference KMC Draw Desc Image

☐ 4. Document ID: US 5030629 A

L4: Entry 4 of 5

File: USPT

Jul 9, 1991

US-PAT-NO: 5030629

DOCUMENT-IDENTIFIER: US 5030629 A

TITLE: Compositions and method comprising heterocyclic compounds containing two

heteroatoms as membrane penetration enhancers

DATE-ISSUED: July 9, 1991

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

Rajadhyaksha; Vithal J. Mission Viejo CA 92691

US-CL-CURRENT: $\underline{514/211.07}$; $\underline{514/228.8}$, $\underline{514/256}$, $\underline{514/275}$, $\underline{514/356}$, $\underline{514/374}$, $\underline{514/377}$, $\underline{514/385}$, $\underline{514/392}$, $\underline{514/423}$, $\underline{514/470}$, $\underline{514/652}$, $\underline{514/772}$,

514/788, 514/946, 514/947

Full Title Citation Front Review Classification Date Reference KMC Draw Desc Image

☐ 5. Document ID: US 4822500 A

L4: Entry 5 of 5

File: USPT

Apr 18, 1989

DOCUMENT-IDENTIFIER! US 4822500 A

TITLE: Saturated brine well treating fluids and additives therefore

DATE-ISSUED: April 18, 1989

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

Dobson, Jr.; James W. Houston TXMondshine; Alan T. TXHouston Mondshine; Thomas C. Houston TX

US-CL-CURRENT: 507/212; 507/110, 507/111, 507/213, 507/903, 507/925

Full Title Citation Front Review Classification Date Reference

KWC Draw Desc Image

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| Term | Documents |
|---------------------------------------------------------------------------|-----------|
| FERMENTATION.USPT. | 23827 |
| FERMENTATIONS.USPT. | 2652 |
| SALINE.USPT. | 74469 |
| SALINES.USPT. | 162 |
| "SODIUM BICARBONATE".USPT. | 0 |
| CORROSION.USPT. | 122314 |
| CORROSIONS.USPT. | 304 |
| (FERMENTATION AND SALINE AND "SODIUM BICARBONATE" AND CORROSION).USPT. | 5 |

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10 Documents, starting with Document: 5

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Search Results - Record(s) 1 through 9 of 9 returned.

☐ 1. Document ID: US 6071735 A

L5: Entry 1 of 9 File: USPT Jun 6, 2000

US-PAT-NO: 6071735

DOCUMENT-IDENTIFIER: US 6071735 A

TITLE: Enzyme preparation with endoglucanase activity

DATE-ISSUED: June 6, 2000

INVENTOR-INFORMATION:

CITY NAME STATE ZIP CODE COUNTRY Schulein; Martin Copenhagen .O slashed. DKX Oxenb.o slashed.ll; Karen Charlottenlund DKX Margrethe Birker.o slashed.d DKX Andersen; Lene Nonboe Lassen; S.o slashed.ren Copenhagen .O slashed. DKX Flensted Kauppinen; Markus Sakari Copenhagen N DKX Nielsen; Jack Bech Hellerup DKX

US-CL-CURRENT: 435/209; 435/264, 435/278, 8/400

Full Title Citation Front Review Classification Date Reference KWIC

KWC Draw, Desc Image

☐ 2. Document ID: US 6001639 A

L5: Entry 2 of 9 File: USPT Dec 14, 1999

DOCUMENT-IDENTIFIER: US 6001639 A

TITLE: Endoglucanases

DATE-ISSUED: December 14, 1999

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY Schulein; Martin Copenhagen DKX Andersen; Lene Nonboe Aller.o slashed.d DKX Lassen; S.o slashed.ren Flensted Copenhagen DKX Kauppinen; Markus Sakari Copenhagen DKX DKX Lange; Lene Valby Nielsen; Ruby Iium DKX Farum JPX Ihara; Michiko Chiba Takagi; Shinobu Chiba JPX

US-CL-CURRENT: 435/263; 435/209, 435/277, 510/320, 510/321

Full Title Citation Front Review Classification Date Reference KMIC Draw. Desc Image

☐ 3. Document ID: US 5919691 A

L5: Entry 3 of 9 File: USPT Jul 6, 1999

US-PAT-NO: 5919691

DOCUMENT-IDENTIFIER: US 5919691 A

TITLE: Enzyme and enzyme preparation with endoglucanase activity

DATE-ISSUED: July 6, 1999

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY Schulein; Martin Copenhagen .O slashed. DKX Oxenb.o slashed.ll; Karen Charlottenlund DKX Margrethe Birker.o slashed.d DKX Andersen; Lene Nonboe Lassen; S.o slashed.ren Copenhagen .O slashed. DKX Flensted DKX Kauppinen; Markus Sakari Copenhagen N Nielsen; Jack Bech DKX Hellerup

US-CL-CURRENT: 435/209; 435/255.2, 435/256.1, 435/256.7, 435/320.1, 536/23.2

Full Title Citation Front Review Classification Date Reference KMC Draw Desc Image

☐ 4. Document ID: US 5912157 A

L5: Entry 4 of 9 File: USPT Jun 15, 1999

DOCUMENT-IDENTIFIER: US 5912157 A

TITLE: Alkaline cellulases

DATE-ISSUED: June 15, 1999

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

von der Osten; Claus Lyngby DKX

Schulein; Martin K.o slashed.benhavn .O slashed. DKX

US-CL-CURRENT: 435/209; 435/267, 510/320



☐ 5. Document ID: US 5472732 A

L5: Entry 5 of 9 File: USPT Dec 5, 1995

US-PAT-NO: 5472732

DOCUMENT-IDENTIFIER: US 5472732 A

TITLE: Indigestible dextrin

DATE-ISSUED: December 5, 1995

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

Ohkuma; Kazuhiro Sanda JPX
Hanno; Yoshio Itami JPX
Inada; Kazuyuki Takarazuka JPX
Matsuda; Isao Itami JPX
Katta; Yasuo Hyogo JPX

US-CL-CURRENT: 426/658; 426/549, 426/646

Full Title Citation Front Review Classification Date Reference KMC Draw Desc Image

☐ 6. Document ID: US 5429766 A

L5: Entry 6 of 9 File: USPT Jul 4, 1995

DOCUMENT-IDENTIFIER: US 5429766 A

TITLE: Detergent composition containing alkaline pullylanase enzyme

DATE-ISSUED: July 4, 1995

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY Sone; Taeko JPX Utsunomiya Tosaka; Masaki JPX Utsunomiya Saeki; Katsuhisa Kawachi JPX Ara; Katsutoshi Utsunomiya JPX Deguchi; Katsuhiko Utsunomiya JPX JPX Igarashi; Kazuaki Ichikaimachi

US-CL-CURRENT: 510/392; 435/210, 435/832, 510/226, 510/320, 510/323

Full Title Citation Front Review Classification Date Reference

KWC Draw Desc Image

7. Document ID: US 5364652 A

L5: Entry 7 of 9 File: USPT Nov 15, 1994

US-PAT-NO: 5364652

DOCUMENT-IDENTIFIER: US 5364652 A

TITLE: Indigestable dextrin

DATE-ISSUED: November 15, 1994

INVENTOR-INFORMATION:

STATE ZIP CODE COUNTRY NAME CITY Ohkuma; Kazuhiro Sanda JPX Hanno; Yoshio Itami JPX Inada; Kazuyuki Takarazuka JPX Matsuda; Isao Itami JPX Katta; Yasuo JPX Hyogo

US-CL-CURRENT: 426/549; 426/590, 426/658

Full Title Citation Front Review Classification Date Reference KMC Draw Desc Image

8. Document ID: US 5316691 A

L5: Entry 8 of 9 File: USPT May 31, 1994

DOCUMENT-IDENTIFIER: US 5316691 A

TITLE: Detergent composition containing an alkaline pullulanase from bacillus

ferm BP-3048

DATE-ISSUED: May 31, 1994

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|---------|-------|----------|---------|
| Sone; Taeko | Tochigi | | | JPX |
| Tosaka; Masaki | Tochigi | | | JPX |
| Saeki; Katsuhisa | Tochigi | | | JPX |
| Ara; Katsutoshi | Tochigi | | | JPX |
| Deguchi; Katsuhiko | Tochigi | | | JPX |
| Igarashi; Kazuaki | Tochigi | | | JPX |

US-CL-CURRENT: 510/392; 435/210, 510/226, 510/320, 510/323, 510/374

Full Title Citation Front Review Classification Date Reference KMC Draw. Desc Image

9. Document ID: US 4822500 A

L5: Entry 9/of 9

File: USPT

Apr 18, 1989

US-PAT-NO: 4822500

DOCUMENT-IDENTIFIER! US 4822500 A

TITLE: Saturated brine well treating fluids and additives therefore

DATE-ISSUED: April 18, 1989

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

Dobson, Jr.; James W. Houston TX Mondshine; Alan T. Houston TX Mondshine; Thomas C. Houston TX

US-CL-CURRENT: 507/212; 507/110, 507/111, 507/213, 507/903, 507/925

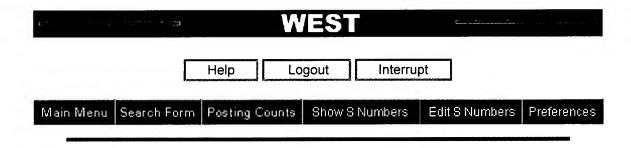
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| Term | Documents |
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| SALINE.USPT. | 74469 |
| SALINES.USPT. | 162 |
| "SODIUM SULFATE".USPT. | 0 |
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| CORROSIONS.USPT. | 304 |
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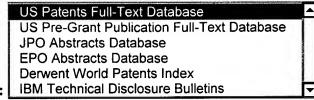
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| SALINES.USPT. | 162 |
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| CORROSIONS.USPT. | 304 |
| (FERMENTATION AND SALINE AND CORROSION AND "SODIUM SULFATE").USPT. | 9 |



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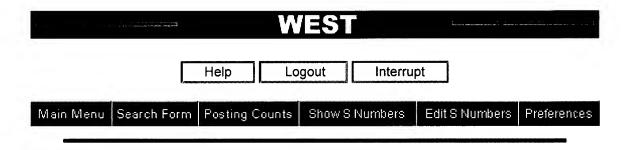
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Search History

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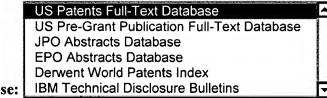
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| USPT | "fermentation" and "saline" and "sodium sulfate" and "corrosion" | 9 | <u>L5</u> |
| USPT | "fermentation" and "saline" and "sodium bicarbonate" and "corrosion" | 5 | <u>L4</u> |
| USPT | "fermentation" and "saline" and "sodium carbonate" and "corrosion" | 11 | <u>L3</u> |
| USPT | "fermentation" and "saline" and "soda ash" and "corrosion" | 2 | <u>L2</u> |
| USPT | "fermentation" and "saline" and "soda ash" | 23 | <u>L1</u> |

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Search Results -

| Term | Documents |
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| CORROSION.USPT. | 122314 |
| CORROSIONS.USPT. | 304 |
| (6 AND CORROSION).USPT. | 0 |



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| | 16 and "corrosion" | • | |
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Search History

Today's Date: 10/17/2001

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| USPT | 4162324.pn. | 1 | <u>L6</u> |
| USPT | "fermentation" and "saline" and "sodium sulfate" and "corrosion" | 9 | <u>L5</u> |
| USPT | "fermentation" and "saline" and "sodium bicarbonate" and "corrosion" | 5 | <u>L4</u> |
| USPT | "fermentation" and "saline" and "sodium carbonate" and "corrosion" | 11 | <u>L3</u> |
| USPT | "fermentation" and "saline" and "soda ash" and "corrosion" | 2 | <u>L2</u> |
| USPT | "fermentation" and "saline" and "soda ash" | 23 | <u>L1</u> |